

# Allergies in Horses

*Equine allergies can be performance-limiting, painful, and unsightly—and expensive to diagnose and treat*

## Overview

Allergy is defined as hypersensitivity to one or more allergens (such as mold spores, pollens, or insect bites), resulting in a markedly increased reactivity (overreaction) of the immune system after repeat exposures.

Upon exposure to an allergen, the horse's immune system produces antibodies called immunoglobulin E (IgE). Upon subsequent exposures to that allergen, the allergen binds to IgE localized on special cells of the immune system called mast cells and basophils, causing potent mediators of inflammation (e.g., cytokines, histamine) to be released from these cells. The inflammatory mediators have far-reaching effects and can cause smooth muscle constriction, dilation of blood vessels, and stimulation of the nervous system. Other mechanisms, cytokines, and immune cells are also thought to play a role in equine allergic reactions.<sup>1</sup>

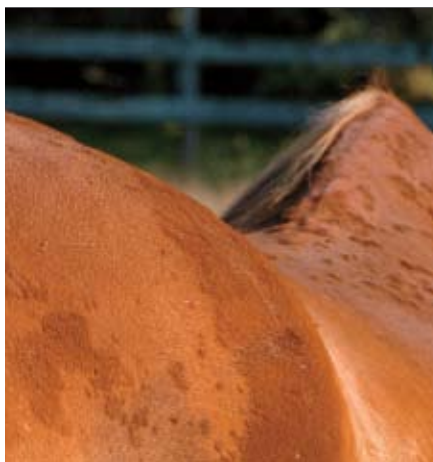
According to experts, equine allergies, which primarily affect the skin and respiratory tract, are increasingly common. They can be performance-limiting, painful, unsightly, and expensive to diagnose and treat. Not only is the allergy itself problematic, but secondary problems such as self-trauma (e.g., tail rubbing due to extreme itchiness [pruritus]) can occur that require treatment. Horses can develop allergies at any age and, once affected, remain allergic to those substances for the rest of their lives.

## Potential Allergens in Horses

Equine allergies are most commonly caused by insect bites, inhaled plant pollens, ingestants, and drugs that can include:

- Biting midges (*Culicoides*), gnats, horse flies, house flies, and mosquitoes;
- Grass, weed, and tree pollens;
- Horse feed ingredients;
- Mold spores;
- Storage mites; and
- Vaccines and drugs.

Hypersensitivity reactions can also be caused by animal danders, dust, feathers,



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aerosols, volatile chemicals, and food additives. Skin irritation or contact dermatitis can be caused by direct contact with an irritant such as a bit, saddle, or other tack item.<sup>7</sup>

## Clinical Signs of Allergies

Allergic reactions can range in severity from mild reactions affecting a small region of the skin to life-threatening reactions or even sudden death (e.g., an anaphylactic reaction). Common signs of skin allergies include itching, rubbing, and scratching, urticaria (i.e., transient focal swellings in the skin or mucus membranes—also called hives), thickened skin, and hair loss.<sup>1</sup> Signs of respiratory allergy include coughing, labored breathing, exercise intolerance, and poor performance. Allergic airway disease is also referred to as heaves, recurrent airway obstruction (RAO), and inflammatory airway disease (IAD), among others.<sup>3</sup>

## Diagnosis

Allergy, or atopic dermatitis, is a complex disease and can only be diagnosed after all other known causes of pruritus have been ruled out. Proper diagnosis relies on a thorough physical examination and clinical history. For horses with skin allergy signs,

biopsy of one or more lesions and routine microscopic examination of the sample can help rule out other common causes of skin problems. Some conditions mimicking allergic reactions in horses include blunt-scratch injury, reactions to heat, cold, light (photosensitization, sunburn), *erythema multiforme*, *pemphigus foliaceus*, collagen vascular disease, infections, neoplasia, lungworms, or even psychogenic causes.<sup>2,4</sup>

Once allergy is diagnosed as the cause, the next step is to identify causative substances through allergy testing. Two types of allergy tests are available, intradermal allergy testing (IDT) and serum allergy testing (SAT).

The IDT involves injecting small amounts of aqueous allergen extracts into the skin (usually on the neck). The injection sites are then monitored for 30 minutes to 24 hours. A positive response is the formation of a wheal (a raised flat-top swelling) at the injection site. The use of corticosteroids, antihistamines, or phenothiazine tranquilizers is known to interfere with the IDT, so these products must not be used on the horse for about two to four weeks before testing.

Serum allergy testing (SAT) involves submitting a single blood sample to a laboratory that will then look for IgE antibodies against common allergens such as weeds, trees, grass pollens, molds, insects (e.g., the biting midge *Culicoides*), or feed ingredients. Unlike the IDT, SAT is not impacted by the use of antihistamines or corticosteroids.

Both tests can generate false positives and negatives, so it's best for your veterinarian or a board-certified veterinary dermatologist to interpret the results. Although studies have yet to be completed in the horse, canine cases have shown that treatment of allergens identified by either test method yields equivalent rates of improvement.<sup>8</sup>

## Treatment

A multimodal treatment approach is encouraged for treating equine allergies.<sup>1,5</sup> Allergy avoidance is a preventive option for

horses with allergies to known antigens.<sup>5</sup> For example, blanket horses that are hypersensitive to *Culicoides* (sweet itch), stable them during peak insect activity (early morning and evening), and use bug repellents.<sup>6</sup>

Owners are also encouraged to consider topical control strategies, such as soothing shampoos and conditioners, and if necessary, topical corticosteroids.<sup>5</sup>

Corticosteroids are often used in horses with dermatologic (skin) allergic manifestations. Prednisolone given daily (orally) induces clinical remission. The dose is tapered slowly over time to the lowest dose that will control the urticaria (for example, 200-300 mg every other morning). Prednisolone is preferable to other corticosteroids such as dexamethasone or triamcinolone as prednisolone is less immunosuppressive and less likely to result in laminitis.

Steroids should only be used for short-term therapy. Glucocorticoids exert profound effects upon all organ systems; long-term use can lead to an unacceptably high risk of serious side effects, compared with any possible benefits.

Other agents that can be useful in managing urticaria are omega fatty acids,

antihistamines, tricyclic antidepressants, phosphodiesterase inhibitors, methylsulfonylmethane, diethylcarbamazine, levamisole, doxepin, cyclosporine, and others.<sup>2,5</sup>

Hyposensitization, also referred to as allergen-specific immunotherapy (ASIT), has been used to manage urticaria, insect hypersensitivities, and allergen-induced RAO. Allergens are combined in solution and injected under the skin to induce immunologic tolerance. If effective, treatment is life-long. Response to therapy is not immediate and it can take up to 12 months to determine efficacy.<sup>5</sup>

For horses with respiratory manifestations of allergies, treatment involves improving the environment; reducing airway inflammation; and dilating the airways to reduce obstruction. Owners should consider the horse's "breathing zone"—the two-foot sphere around his nose. This zone should be kept as clear of dust and particles as possible. Key management factors include keeping the horse outside the barn and scattering hay on the ground rather than feeding from a bale. Acute flare-ups can be treated with corticosteroids (prednisolone or fluticasone) and/or bronchodilators.<sup>3</sup>

## Prognosis

Except for anaphylaxis, which can kill quickly, allergies aren't usually life-threatening. Successful treatment requires addressing "the patient's predisposing/environmental influences along with treating the secondary perpetuating factors...all while specifically targeting the primary etiology."<sup>5</sup> 🐾

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